

91-231894/32 SHOW 29.01.90 SHOWA DENKO KK 29.01.90-JP-018502 (07.08.91) C08g-63/06 C12p-07/62 C12r-01/05 New biodegradable microbial polyester copolymers - contg. 3-hydroxy-butyrate, 3-hydroxy-valerate, 3 hydroxy-propionate and 5-hydroxy-valerate units C91-100826 R(AT BE DE DK FR GB IT NL)	A23 B07 C03 D16 (A92 A96 D22) *EP -440-165-A	SHOW 29.01.90 A(5-E2, 9-A) BC(4-C3D) D(5-C, 9-C5)										
<p>New random copolymers (I) have a wt.-av. mol wt. (Mw) of 10,000-2,500,000 and comprise 50-97 mole % 3-hydroxybutyrate (3HB) units, 1-25 mole % 3-hydroxyvalerate (3HV) units, 1-15 mole % 3-hydroxypropionate (3HP) and 1-10 mole % 5-hydroxyvalerate (5HV) units.</p> <table> <tr> <td>-OCH₂CH₂CO-</td> <td>-OCH₂CH₂CO-</td> </tr> <tr> <td>CH₃</td> <td>CH₂CH₃</td> </tr> <tr> <td>(3HB)</td> <td>(3HV)</td> </tr> <tr> <td>-OCH₂CH₂CO-</td> <td>-OCH₂CH₂CH₂CH₂CO-</td> </tr> <tr> <td>(3HP)</td> <td>(5HV)</td> </tr> </table>	-OCH ₂ CH ₂ CO-	-OCH ₂ CH ₂ CO-	CH ₃	CH ₂ CH ₃	(3HB)	(3HV)	-OCH ₂ CH ₂ CO-	-OCH ₂ CH ₂ CH ₂ CH ₂ CO-	(3HP)	(5HV)	<p>USE/ADVANTAGE (I) are biodegradable and biocompatible polymers with lower crystallinity and better moulding properties than poly-3-hydroxybutyrate, e.g. with satisfactory flexibility, m.p.s. of 120-130°C and sufficient thermal stability to allow heat sterilisation.</p> <p>They may be used in the mfr. of biomedical materials (e.g. sutures and bone-setting materials), slow-release pharmaceutical and agricultural compsns., sanitary articles, diapers, fishing nets, packaging etc.</p> <p>PREPARATION (I) are produced by culturing a microorganism (esp. an <i>Alcaligenes</i> sp.) under N and/or P limitation in the presence of δ-valerolactone (DVL), 1,5-pentanediol or a mono- or dicarboxylate ester of 1,5-pentanediol, pref. at 20-40°C and pH 6-10.</p> <p>EXAMPLE <i>A. eutrophus</i> ATCC 17699 was cultured in 2000 ml of a medium contg. 4 g/l (NH₄)₂ SO₄, 8 g/l K₂HPO₄, 1.2</p>	EP-440165-A+
-OCH ₂ CH ₂ CO-	-OCH ₂ CH ₂ CO-											
CH ₃	CH ₂ CH ₃											
(3HB)	(3HV)											
-OCH ₂ CH ₂ CO-	-OCH ₂ CH ₂ CH ₂ CH ₂ CO-											
(3HP)	(5HV)											

<p>g/l KH₂PO₄, 0.5 g/l NaCl, 2.4 g/l MgSO₄, 20 ml/l mineral salt soln. and 10 g/l fructose at 30-35°C and pH 7-8 for 20hr. After adding 110 g/l DVL, cultivation was continued for 60hr.</p> <p>The broth was centrifuged and the pellet dried to give 69 g/l of dry cells contg. 33% of a copolymer (Mw = 420,000) contg. 92% 3HB, 2% 3HV, 5% 3HP and 1% 5HV units. (15pp367DAHDwgNo0/0)</p> <p>(E) ISR: No Search Report</p>	
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